

NON-PUBLIC?: N
ACCESSION #: 9406270283
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Brunswick Steam Electric Plant, Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000324

TITLE: Dispatcher Switching Evolution Results in Loss of Offsite
Power to Unit 2
EVENT DATE: 05/21/94 LER #: 94-08-00 REPORT DATE: 06/09/94

OTHER FACILITIES INVOLVED: Brunswick Unit 1 DOCKET NO: 05000325

OPERATING MODE: 5 POWER LEVEL: 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: Jeanne F. McGowan, Regulatory TELEPHONE: (910) 457-2136
Affairs Specialist

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On May 21, 1994, Unit 2 was in a Refuel Outage. The Unit 2 Startup Auxiliary Transformer (SAT) was being supplied from Switchyard Bus 2B. At 1442 hours, the system dispatcher notified the Brunswick Control Room that maintenance had been completed on the Whiteville 230 kV line and that the circuit breakers would be restored to service. Testing of the Whiteville breakers would involve opening one breaker on Switchyard bus 2B and two breakers on Switchyard Bus 2A. At 1509 hours, the dispatcher opened the one breaker on Bus 2B. He then opened the remaining two breakers feeding bus 2B (the two breakers feeding Bus 2A should have been opened). Opening the remaining two breakers to Bus 2B caused a Loss of Offsite Power to Unit 2. All four Diesel Generators (DGs) started and DG 3 and 4 auto loaded to their respective Emergency Buses. Engineered Safety Feature Systems actuated as required. The Reactor Building Ventilation inboard dampers failed to automatically isolate due to a

failed relay. The dampers were manually closed from the Control Room. All other systems operated as designed. The cause of the event was personnel error. Corrective actions include requiring dual verification for switching evolutions at nuclear power plants and reviewing the event with appropriate operations personnel. The safety significance was minimal. All DGs unloaded and DGs 1 and 2 started and DGs 3 and 4 loaded to their respective Emergency Buses. The cause classification for this event per the criteria of NUREG-1022 is personnel error.

END OF ABSTRACT

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TITLE

Dispatcher Switching Evolution Results in Loss of Offsite Power to Unit 2

INITIAL CONDITIONS

On May 21, 1994, Unit 2 was in a Refuel Outage. The Unit 2 Start-up Auxiliary Transformer (SAT) and the Caswell Beach Pumping Station Transformer were being supplied from Switchyard Bus 2B.

EVENT NARRATIVE

On May 20, 1994, a line clearance from the System Dispatcher had been placed on the Unit 2 Whiteville 230 kV Line to apply Room Temperature Vulcanized (RTV) Silicone coating to the bus insulators. On May 21, 1994, Carolina Power & Light Substation Maintenance personnel canceled the line clearance on the Unit 2 Whiteville 230 kV line. The system dispatcher informed the Brunswick Nuclear Plant (BNP) Control Room that the Whiteville circuit breakers were going to be returned to service. The switching instructions were written to test and restore the section of the Whiteville 230 kV line to service. The Wallace (28B), the Castle Hayne (27A), and the Delco West (30A) circuit breakers would be opened to isolate the 2B bus from any possible fault, and the Whiteville 230 kV line would be tested from the Wallace 230 kV line through the 2A bus.

The Unit 2 230 kV electrical system configuration (see attachment) has four incoming feeders from the grid (Whiteville, Delco West, Wallace, and Castle Hayne West). The feeders can be lined up to either the 2A or 2B Bus. The Unit Main Transformers, the Startup Auxiliary Transformer (SAT), and the Unit Auxiliary Transformer (UAT) also supply either the 2A or the 2B Bus. The SAT supplies power to the plant during shutdown conditions. During power operations the SAT feeds the Reactor

Recirculating Pumps and the UAT supplies all other plant loads. At the time of the switching evolution the SAT was being supplied from the Switchyard 2B Bus with the Delco West, the Castle Hayne West and the Wallace circuit breakers feeding the bus.

On May 21, 1994, at 1442 hours, the dispatcher notified the BNP Control Room that they were commencing the switching evolution to return the Whiteville 230 kV line to service. At 1505 hours, the dispatcher confirmed with the BNP Unit 2 Control Room that the SAT was being supplied from Switchyard Bus 2B. The procedure instructs the dispatcher to "go to manual control and open the Wallace 28B 230 kV CB, the Castle Hayne West 27A 230 kV CB, and the Delco West 30A 230 kV CB". There is a manual selection for each of the circuit breakers on the 230 kV line and at 1508 hours, the dispatcher placed the Delco West 30B, Wallace 28B, and Castle Hayne West 27B circuit breakers in manual. At 1509 hours, he opened the Wallace 28B, Delco West 30B, and Castle Hayne 27B circuit breakers de-energizing Bus 2B and causing a loss of power to the SAT. All four Diesel Generators (DGs) auto started and DG 3 and DG 4 loaded to their respective Emergency Buses. The Reactor Protection System (RPS) motor generators "A" and "B" tripped. The spent fuel pool cooling pumps and supplemental spent fuel pool cooling pumps tripped and the "2A" nuclear service water pump auto started. There was an isolation of Reactor Building Ventilation System and an auto start of the Standby Gas Treatment System (SBGT). The Reactor Building Ventilation system inboard dampers did not automatically isolate due to a relay failure in the SBGT control relay logic. The following Primary Containment Isolation System (PCIS) isolations occurred:

PCIS Group 2, Drywell Floor and Equipment Drains,

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PCIS Group 3, Reactor Water Cleanup System,

PCIS Group 6, Containment Atmospheric Control System,

PCIS Group 10, Pneumatic Nitrogen System

Unit 1 experienced an isolation of the PCIS Group 6 (CAC) valves, a Reactor Building isolation and a SBGT auto start, loss of two drywell coolers, a Conventional Service Water (CSW) pump trip and an auto start of a standby CSW pump, and the Unit 1 Hydrogen Water Chemistry System trip.

The Unit 2 Reactor Operator informed the dispatcher that there had been an auto start of the diesel generators. The dispatcher realized that the

"B" breakers had been opened rather than the "A" breakers and notified Brunswick of the error. At 1511 hours the "B" circuit breakers were closed and power was restored to the Unit 2 SAT.

Subsequent recovery actions were in accordance with the plant Abnormal Operating Procedures. At 1551 hours, Buses 2B, 2C, and 2D were re-energized from the SAT. Emergency Bus E4 was re-energized from bus 2C at 1613 hours, and Bus E3 was reenergized from Bus 2D at 1618 hours. All four diesel generators were secured and placed in standby. All switching operations were completed at 1828 hours, with the switchyard 230 kV buses in normal configuration.

CAUSE OF EVENT

The cause of the event was personnel error. The dispatcher executed the actions specified in the switching instructions too rapidly. The switching instruction contained six actions in one step, allowing the performance of multiple actions without referencing the procedure. All six actions were completed in 52 seconds which did not allow time for self-checking. Additionally, the time between actions did not allow communications (intended action and feedback) with the BNP Control Room which should have identified that the intended action was incorrect.

The switching instructions contained actions for both the "A" and "B" bus in one step. The dispatcher had previously reviewed the switching instructions and noted that actions were required on both "A" and "B" buses. He had underlined the differences, yet when referencing the step prior to execution, only "B" registered in his mind.

A contributing factor was the BNP review of the switching instructions prior to the evolution. The review did not identify that the instructions were not written to the same standard as BNP procedures nor that a high risk potential existed with incorrect execution of the switching instructions.

CORRECTIVE ACTIONS

1. Appropriate controls were established to ensure that switching instructions follow established plant procedure format.
2. The event was reviewed by appropriate system dispatchers.
3. Pre-job briefings will be required for all planned switching activities involving nuclear power plants.

4. Instructions for any planned switching activity at a nuclear power plant will require dual verification ensuring that the correct device has been selected.
5. Senior Reactor Operator review of switching instructions will be documented on the BNP Control Room copy prior to authorization of planned switching activities.
6. The event will be reviewed by appropriate BNP operations personnel.
7. System dispatchers will be trained on the STAR (Stop, Think, Act, Review) method of self-checking.

SAFETY ASSESSMENT

The safety significance was minimal. All four diesel generators auto started with diesels 3 and 4 auto loading to their respective emergency buses. All Engineered Safety Feature systems operated as designed with the exception of the Reactor Building inboard supply and exhaust dampers failing to auto close. The failure was due to a relay failure in the Standby Gas Treatment System control relay logic. The dampers were manually closed from the Control Room at 1608 hours. The relay was replaced on May 28, 1994. Switchyard bus 2B was restored within 4 minutes and bus 2A remained energized and available throughout the event.

PREVIOUS SIMILAR EVENTS

Previous events involving a Loss of Offsite Power are discussed in LERs 1-93-008 and 291-016.

EIIS COMPONENT IDENTIFICATION

System/Component EIIS Code

Containment Atmospheric Control System IK
Primary Containment Isolation System JM
Reactor Protection System JD
Standby Gas Treatment System BH
Switchyard System FK

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Enclosure
List of Regulatory Commitments

The following table identifies those actions committed by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

Commitment

1. Pre-job briefings will be required for all planned switching activities involving nuclear power plants
2. Instructions for any planned switching activity at nuclear power plants will require dual verification ensuring that the correct device has been selected.
3. Senior Reactor Operator review of switching instructions will be documented on the BNP Control Room copy prior to authorization of planned switching activities.
4. The event will be reviewed by appropriate BNP operations personnel.
5. System dispatchers will be trained on the STAR method of self-checking.

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Figure omitted.

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CP&L

Carolina Power & Light Company

Brunswick Nuclear Plant
P.O. Box 10429
Southport, NC 28461-0429

JUN 16 1994 SERIAL: BSEP-94-0230
10CFR50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

BRUNSWICK NUCLEAR PLANT UNIT 2
DOCKET NO. 50-324/LICENSE NO. DRP-62
LICENSEE EVENT REPORT 2-94-008

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company submits the enclosed Licensee Event Report. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is submitted in accordance with the format set forth in NUREG-1022, September 1983.

Please refer any questions regarding this submittal to Mr. M. A. Turkal at (910) 457-3066.

Very truly yours,

J. Cowan, Director-Site Operations
Brunswick Nuclear Plant

JFM/jfm

Enclosures

1. Licensee Event Report
2. Summary of Commitments

cc: Mr. S. D. Ebnetter, Regional Administrator, Region II
Mr. P. D. Milano, NRR Project Manager - Brunswick Units 1 and 2
Mr. R. L. Prevatte, Brunswick NRC Senior Resident Inspector

*** END OF DOCUMENT ***
